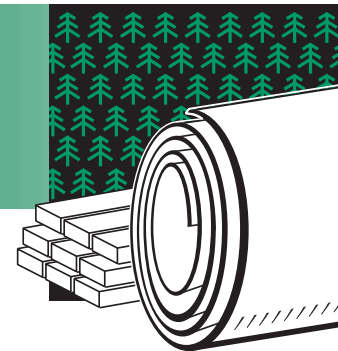


# FOREST PRODUCTS

## Project Fact Sheet



## RECYCLING OF BLEACH PLANT FILTRATES BY ELECTRODIALYSIS REMOVAL OF INORGANIC NON-PROCESS ELEMENTS

### BENEFITS

- Pollution prevention through recycling of bleach-plant effluents
- Significant energy savings due to the use of energy-efficient membrane process
- Reduced water consumption
- Lower wastewater discharge

### APPLICATIONS

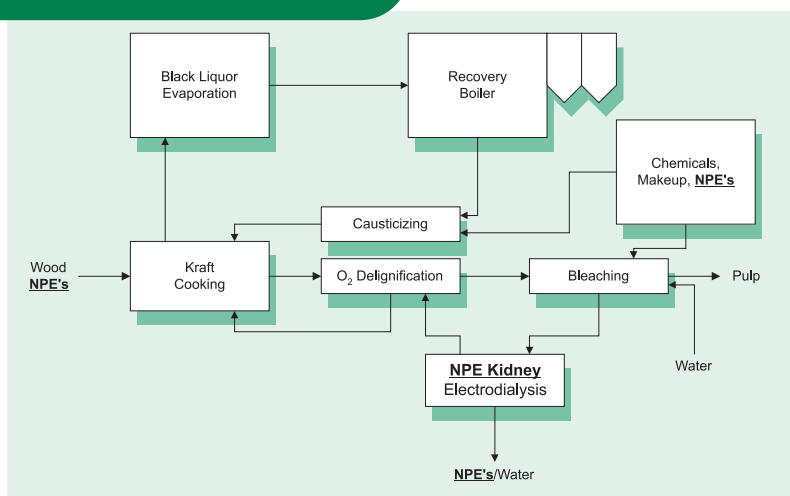
Successful completion of this effort will lead to commercial processes to help pulp mills significantly reduce their water consumption and wastewater discharge.

### ELECTRODIALYSIS TECHNOLOGIES WILL HELP CLEAN UP BLEACHING PLANT WASTE STREAMS AND SAVE WATER

An important goal of the U.S. forest products industry is to reduce the amount of water consumed by bleaching plants, which presently represents 45 percent of the water used throughout the industry. In order to recycle the effluents from bleached kraft mills without causing operational problems, the inorganic non-process elements (NPEs) must be selectively removed before they reach the recovery cycle. Electrodialysis appears to offer unique advantages for removal of NPEs and the efficient recovery of filtrates from effluents. This project will focus on overcoming technical barriers to applying this technology in kraft mills. In particular, membranes must be selective for NPEs and they should resist fouling. An economic analysis of the process will also be carried out.

To bring the best possible resources to bear on this problem, a collaborative national laboratory-university-industry team has been assembled. The team includes scientists from Argonne National Laboratory who are familiar with electrodialysis technology, staff members from the Institute of Paper Science and Technology who are experts in membrane research and who have a comprehensive closed-cycle mill program underway, and representatives of several forest products companies who understand the industry's needs.

### ELECTRODIALYSIS PROCESS



**Electrodialysis selectively removes inorganic non-process elements from bleach plant filtrates and enables mills to reduce water consumption and waste discharge.**



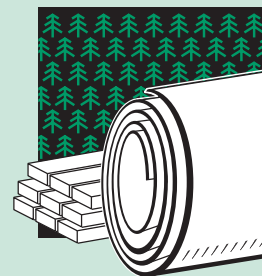
## Project Description

**Goal:** To evaluate the feasibility of applying electrodialysis to pulp mill processes for the efficient and economical removal of NPEs from bleach plant effluent streams.

The project will evaluate the technical and economic feasibility of the electrodialysis process, demonstrate the process at mill sites, and transfer the technology to forest-product companies. Tasks will include laboratory research on the key technical issues, evaluation of the process economics, process optimization, and field demonstrations.

## Progress & Milestones

- Milestones completed include characterization of bleach plant filtrates, evaluation of membrane selectivity and fouling potential for membranes, and development of fouling mitigation methods.
- Preliminary process designs and economic evaluations are also completed.
- Laboratory-scale process development and integration are close to being finished.
- A pilot-scale demonstration will be conducted in 1999, along with a full evaluation of the process design and economics of the process.



## PROJECT PARTNERS

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